

CLAIMS

What is claimed is:

1. A TV signal receiving module, the TV signal receiving module comprising:
 - a tuner receiving an analog signal and separating the analog signal into a video signal and an audio signal or receiving a digital signal and converting the digital signal into a first data stream;
 - a video decoder converting the video signal of the analog signal into a digital video stream;
 - an audio decoder converting the audio signal into a digital audio stream;
 - an encoding engine encoding the digital video and audio streams into a second data stream; and
 - a network connecting part converting a format of the first data stream or the second data stream for the portable computer.
2. The TV signal receiving module as recited in claim 1, wherein the TV signal receiving module is connected to a portable computer through a USB connector or a USB external connection terminal.
3. The TV signal receiving module as recited in claim 1, wherein the first data stream comprises an MPEG-2 transport stream and the second data stream comprises an MPEG-2 program stream.
4. The TV signal receiving module as recited in claim 2, wherein the network connecting part comprises:
 - a first USB controller converting the format of the first data stream for the USB port, and
 - a second USB controller converting the format of the second data stream for the USB port.
5. The TV signal receiving module as recited in claim 2, wherein the network connecting part further comprises:
 - a USB hub receiving and transmitting the converted first data stream and the second data stream to the USB connector or the USB external connection terminal.

6. The TV signal receiving module as recited in claim 1, wherein the tuner converts the video signal and the audio signal into a CVBS (composite video burst sync) signal and a 2nd IF (intermediate frequency) signal, respectively.

7. The TV signal receiving module as recited in claim 6, further comprising:
an ADC (analog/digital converter), wherein the audio decoder converts the 2nd IF signal received from the tuner into the digital audio stream and transmits the digital audio stream to the encoding engine through the ADC.

8. The TV signal receiving module as recited in claim 7, wherein the video decoder, the audio decoder, the ADC, the encoding engine, the network connecting part are integrated circuits or chips.

9. The TV signal receiving module as recited in claim 1, further comprising:
a memory storing the digital video and audio streams of a picture to be displayed on a display part of the portable computer.

10. The TV signal receiving module as recited in claim 1, wherein the TV signal receiving module is connected to the portable computer without being inserted into a slot of a main board.

11. The TV signal receiving module as recited in claim 1, wherein the TV signal receiving module is internally mounted into a battery mounting place provided in the portable computer.

12. The TV signal receiving module as recited in claim 1, wherein a shape of the TV signal receiving module corresponds to a shape of a battery.

13. The TV signal receiving module as recited in claim 1, wherein the TV signal receiving module is smaller than a battery.

14. The TV signal receiving module as recited in claim 1, wherein the portable computer further comprises a USB port and a battery, and the TV signal receiving module further comprises:

- a connector directly connected to the USB port of the portable computer that is disposed in a bottom of the portable computer and adjacent to a connector to which the battery is connected;

- a power input terminal supplying electric power to the tuner, the video decoder, the encoding engine, and the network connecting part; and

- an external connection terminal indirectly connected to the USB port that is disposed in a back section of the portable computer through a cable.

15. The TV signal receiving module as recited in claim 14, wherein the TV signal receiving module further comprises:

- an S-video input terminal;

- two stereo terminals for the audio signal;

- a video input terminal, and

- a TV signal receiving antenna connected to the tuner, wherein the video decoder is connected to the S-video input terminal and the video input terminal.

16. The TV signal receiving module as recited in claim 14, wherein the connector is used as a connection terminal to mount the TV signal receiving module to the portable computer.

17. The TV signal receiving module as recited in claim 14, wherein, in the portable computer, a TV module connection terminal corresponding to the connector of the TV signal receiving module is separated from and is adjacent to a battery terminal corresponding to a connector of the battery.

18. The TV signal receiving module as recited in claim 14, wherein pins of the connector are partly connected to the USB port of the portable computer and partly connected to a power pin of the portable computer to supply the electric power through the input terminal.

19. The TV signal receiving module as recited in claim 14, wherein the external connection terminal is used when the TV signal receiving module is connected to the USB port of the portable computer through the cable, allowing the portable computer to receive the electric power from the battery or from a commercial AC power source, where the TV signal receiving module receives the electric power from the commercial AC power source through the power input terminal.

20. The TV signal receiving module as recited in claim 1, wherein the encoding engine is an MPEG (moving picture experts group)-2 encoder.

21. The TV signal receiving module as recited in claim 1, wherein the tuner is an ATSC/NTSC compatible tuner.

22. A TV signal receiving module for a portable computer having a USB port and a battery mounting place, comprising:

an external shape that corresponds to a shape of a battery to be mounted to the battery mounting place of the portable computer.

23. The TV signal receiving module as recited in claim 22, further comprising:

a tuner receiving an analog TV signal and a digital TV signal;

a video decoder receiving and processing a video signal divided from the analog TV signal so as to display a picture based on the video signal;

an encoding engine encoding the video signal processed in the video decoder having a predetermined format; and

a network connecting part controlling the digital TV signal and the encoded video signal to be transmitted to the portable computer.

24. The TV signal receiving module as recited in claim 23, further comprising:

a connector directly connected to the USB port of the portable computer that is disposed in a bottom of the portable computer and adjacent to a connector to which the battery is connected;

a power input terminal supplying electric power to the tuner, the video decoder, the encoding engine, and the network connection part; and

an external connection terminal indirectly connected to the USB port that is disposed in a back section of the portable computer through a cable.

25. An operating method of a TV signal receiving module connected to a portable computer through a USB (universal serial bus) port, the operating method comprising:

- receiving an analog or a digital signal;
- separating the analog signal into a video signal and an audio signal;
- converting the digital signal into a first data stream;
- converting the video signal and the audio signal into a digital video stream and a digital audio stream, respectively;
- encoding the digital video and audio streams into a second data stream; and
- converting a format of the first data stream or the second data stream for the portable computer.

26. The method of the TV signal receiving module as recited in claim 25, wherein the first data stream comprises an MPEG-2 transport stream and the second data stream comprises an MPEG-2 program stream.

27. The method of the TV signal receiving module as recited in claim 25, wherein because the TV signal receiving module is connected to the portable computer, not through a PCI interface, but through the USB port, further comprising:

- recognizing the TV signal receiving module while the portable computer operates.

28. A portable computer having a TV signal receiving module which includes

- a tuner to receive an analog TV signal and a digital TV signal;
- a video decoder to receive and process a video signal divided from the analog TV signal received by the tuner so as to display a picture based on the video signal;
- an encoding engine to encode the video signal processed in the video decoder having a predetermined format;
- a memory to store the encoded video signal having the predetermined format; and
- a network connecting part to control the digital TV signal and the encoded video signal to be transmitted to the portable computer.

29. The TV signal receiving module as recited in claim 28, wherein the portable computer further comprises:

a TV module connection terminal to which the TV signal receiving module is connected, wherein the TV module connection terminal is separated from and adjacent to a battery terminal to which the battery is connected.

30. The TV signal receiving module as recited in claim 28, wherein the TV signal receiving module is connected to the portable computer through the TV module connection terminal to transmit the TV signal to the portable computer.